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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,700	10/24/2003	Charles W. Propst JR.	TPP31437A	6803

7590 01/23/2008  
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EXAMINER
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CORDRAY, DENNIS R

ART UNIT	PAPER NUMBER
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1791

MAIL DATE	DELIVERY MODE
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01/23/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<p align="center"><b>Office Action Summary</b></p>	<p><b>Application No.</b></p> <p align="center">10/691,700</p>	<p><b>Applicant(s)</b></p> <p align="center">PROPST ET AL.</p>	
	<p><b>Examiner</b></p> <p align="center">Dennis Cordray</p>	<p><b>Art Unit</b></p> <p align="center">1791</p>	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 November 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 48-56, 58 and 60-64 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 48-56, 58 and 60-64 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Allowable Subject Matter***

The indication of allowable subject matter in Claim 59 is withdrawn in view of newly discovered prior art. Rejections based on the newly found art are detailed below.

### ***Response to Arguments***

Applicant's amendments, filed 11/21/2007, have overcome the previous rejections over Propst, Jr. in view of others. Therefore, the rejections have been withdrawn. However, upon further consideration, new grounds of rejection are made as detailed below.

### ***Oath/Declaration***

The oath or declaration submitted 10/24/2003 is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02. The oath or declaration is defective because:

It does not state that the person making the oath or declaration acknowledges the duty to disclose to the Office all information known to the person to be material to patentability as defined in 37 CFR 1.56.

The originally submitted Oath recites the duty to disclose to the Office all information known to the person to be material to patentability as defined in 37 CFR 1.56(a), rather than 37 CFR 1.56.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 48-56 and 60-64 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Dilts et al (6576049).

Claims 48-50, 54, 60 and 62-64: Dilts et al discloses a paper sizing composition comprising at least one of AKD or ASA (thus implicitly disclosing that a mixture of AKD and ASA can be used) emulsified in water with at least one emulsion stabilizer, and from about 0.01 to 15% of a hydrophobic substance, based on the total weight of the sizing agent (Abs; col 2, lines 54-60). Alternatively, AKD and ASA are both well known sizing agents. "It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose... [T]he idea of combining them flows

logically from their having been individually taught in the prior art." In re Kerkhoven, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980).

A method of making paper is also disclosed, comprising dispersing the paper sizing composition throughout a paper stock and forming a paper from the stock on a papermaking machine (col 4, lines 27-33). The emulsion stabilizers, which can be present in amounts from 9 to 400% by weight of the total sizing agent, comprise one or a mixture of synthetic cationic polymers based on acrylamides or acrylates, and naturally occurring cationic starches (col 15, line 40 to col 16, line 35). It is noted that the instant Specification, in the last paragraph on p 8, defines "acrylic acid" and "acrylic acid containing" as referring to "materials and compositions, such as polymers, oligomers, or monomers, comprising at least one acrylic or acrylic acid moiety." Acrylamide or acrylate containing polymers have acrylic moieties thus meet the definition for acrylic acid containing material and homopolymers or copolymers of acrylic acid.

The sizing agent is added to papermaking stock in an amount of about 0.01% to about 2% (0.2 to 40 lb/ton), preferably about 0.1% to about 0.5% (2 to 10 lb/ton), sizing agent based on the dry fiber weight (col 17, lines 55-61), which significantly overlays the claimed composition. The amount of acrylic based emulsion stabilizer also overlays the claimed composition.

Any pigment or filler may be added in the usual manner to the paper, such as clay, titanium dioxide (a titanium oxide), etc (col 18, lines 37-39). Note that the claimed composition recites titanium oxide as a species of crosslinking agent. Claim 48 is

directed to a composition comprising titanium oxide, and the Examiner considers any amount of titanium oxide present as capable of crosslinking at least some of the acrylic acid containing composition.

Dilts et al does not explicitly state that the pigments or fillers are added to the stock, but stocks comprising fillers and/or pigments are typical and would at least have been obvious to one of ordinary skill in the art at the time of the invention.

Dilts et al does not disclose a headbox or a furnish comprising an excess of water, but the headbox is a part of a typical papermaking machine and the stock fed to the headbox is typically very dilute (has an excess of water), thus forming paper with a stock having an excess of water via a headbox is inherent or, at least, would have been obvious to one of ordinary skill in the art.

Claims 51-52: The stock can comprise all types of cellulosic fibers, including Kraft, chemical, semichemical, groundwood, chemigroundwood fibers, which the Examiner construes as virgin fibers, or recycled waste papers (col 18, lines 20-36).

Claim 53: Dilts et al discloses one or more emulsion stabilizers, thus the composition can comprise more than one cationic polymer, or polymerizable cationic composition.

Claim 55: Dilts et al discloses most of the claimed AKS species (col 14, lines 19-33).

Claim 56: Dilts et al discloses a pH of the paper pulp if from about 4 to about 9, preferably from about 6 to about 8 (col 18, lines 5-19). Dilts et al discloses adjusting the pH of the stock composition to an alkaline pH, but fails to disclose ammonium hydroxide

(col 22, lines 8-16). Ammonium hydroxide is a well known base and would have been obvious to use for pH adjustment by one of ordinary skill in the art as a functionally equivalent option.

Claim 61: Dilts et al discloses sizing of paperboard products well known to the art, including but not limited to linerboard, corrugating medium, fluting medium, box board, OCC linerboard, gypsum wall board, construction board, saturating paper and board, neutral fine paper, alkaline fine paper, acid fine paper, and non-woven paper (col 17, lines 40-50). The claimed products not listed by Dilts et al would have been obvious as typical paperboard products.

Claims 48, 50-54, 56 and 60-64 are rejected under 35 U.S.C. 103(a) as unpatentable over Guerro et al (5824190) and Pandian et al (5362573) in view of Carlson (2726230).

Claims 48, 53-54, 56 and 64: Guerro et al discloses a surface sizing composition comprising a hydrophobic sizing agent (AKD is exemplified), a hydrophilic dry strength agent, such as a cationic polyacrylamide (cationic acrylic acid containing material) and a crosslinking agent (Abs; col 3, lines 25-31; col 4, lines 27-30; col 5, lines 53-56; col 6, lines 16-18; col 8, lines 57-60). Any known crosslinking agent is usable, including zirconium, hafnium and titanium salts disclosed by Pandian et al (5362573, which is incorporated by reference (col 8, lines 46-53). Pandian et al discloses zirconium and titanium oxides as crosslinking agents that form bonds with the polyacrylamide (col 3, lines 38-68; col 6, lines 62-64). In some embodiments, a cationic polyacrylamide

(further polymerizable cationic composition) or cationic starch is added as a stabilizer (col 8, lines 17-24). Pigments and fillers can also be added to the papermaking furnish (col 8, lines 37-44). Titanium dioxide would have been obvious to one of ordinary skill in the art as a well known pigment, as evidenced by Pandian et al (col 4, line 68 to col 5, line 1).

The composition comprises about 30-95 parts sizing agent to 70-5 parts polyacrylamide and the amount of sizing agent/polyacrylamide added to the paper is from about 0.5 to about 15 lb/ton of paper or board (col 9, lines 50-59; col 10, lines 52-58). The amount of addition significantly overlays the claimed ranges.

Guerro et al teaches that it is known in the art that sizing can be accomplished by either internal sizing processes, which typically involve wet end addition, or surface sizing processes (col 1, lines 43-46). While Guerro et al discloses surface addition, it would also have been obvious to one of ordinary skill in the art to use the claimed sizing composition in a wet end process by adding the composition to the papermaking stock as a well known and functionally equivalent option.

Guerro et al does not disclose the other claimed metal oxides as crosslinking agents.

Carlson discloses polyvalent metallic oxides well known in the art as crosslinking agents for acrylic containing polymers (col 1, lines 63-72 and col 2, lines 1-22). Specific examples given are oxides of zinc, calcium, magnesium, tin, titanium, and aluminum (col 6, lines 67-75).



The art of Guerro et al, Pandian et al, Carlson and the instant invention is analogous as pertaining to crosslinking acrylic compositions. It would have been obvious to one of ordinary skill in the art to use the disclosed metal oxides as crosslinking agents in the process of Guerro et al and Pandian et al in view of Carlson as well known and functionally equivalent options.

Claim 56: Guerro et al discloses adjusting the pH of the polyacrylamide solution to an alkaline pH prior to admixing it with the sizing agent to prevent gel formation or agglomeration (col 7, lines 4-25). Typically, any bases compatible with the sizing agent and polyacrylamide can be used, preferably hydroxide bases (sodium hydroxide is exemplified). Ammonium hydroxide is a well known hydroxide base and would have been obvious to use for pH adjustment by one of ordinary skill in the art as a functionally equivalent option (if evidence is needed, Pandian et al discloses ammonia or sodium hydroxide as pH adjusters (col 5, lines 9-15)).

Claims 50 and 62: Guerro et al discloses adding starch to the furnish (col 8, lines 37-44).

Claims 51 and 52: Guerro et al does not disclose the kinds of fibers used. However, virgin and recycled cellulose fibers are well known papermaking fibers and would have been obvious to one of ordinary skill in the art.

Claim 60: Providing a papermaking stock in a headbox would have been obvious as a typical papermaking process step.

Claim 61: Guerro et al discloses boxboard, linerboard, bleached board and various kinds of paper (col 4, lines 15-26). The claimed products not listed by Guerro et al would have been obvious as typical paperboard products.

Claim 63: Papermaking furnishes are typically very diluted, thus a furnish comprising the sizing composition in an excess of water would have been obvious.

Claims 49 and 55 are rejected under 35 U.S.C. 103(a) as unpatentable over Guerro et al and Pandian et al in view of Dilts et al.

Guerro et al and Pandian et al do not disclose ASA as a sizing agent. Guerro et al discloses that any synthetic surface sizing agent may be used, including non-polymeric agents, e.g. alkylketene dimers, that impart hydrophobic character to the paper surface.

Dilts et al discloses a sizing composition comprising one or more of ASA, AKD and rosin sizing agents and a cationic starch or acrylamide polymer as an emulsion stabilizer. Dilts et al discloses species of AKD that significantly overlay those claimed. Dilts et al teaches that sizing with AKD and ASA sizing agents can be accomplished by either internal sizing processes, which usually involve wet end addition, or surface sizing processes (col 1, lines 25-33).

The art of Guerro et al, Pandian et al, Dilts et al and the instant invention is analogous as pertaining to the sizing of papers using AKD, ASA and cationic polymers. It would have been obvious to one of ordinary skill in the art to use ASA in addition to the AKD in the process of Guerro et al and Pandian et al in view of Dilts et al as a well

known sizing agent and a functionally equivalent option. Alternatively, AKD and ASA are both well known sizing agents and it would have been obvious to combine two for reasons given previously. It would also have been obvious to use the claimed species of AKD as well known, functionally equivalent options. The combination would have used only compositions known in the art without any change in their respective function and would have achieved results predictable to one of ordinary skill.

Claims 48-56 and 60-64 are rejected under 35 U.S.C. 103(a) as unpatentable over Dilts et al in view of Guerro et al and Pandian et al and further in view of Carlson.

The disclosures of Dilts et al, Guerro et al, Pandian et al and Carlson are as detailed above. Dilts et al does not disclose crosslinking the cationic acrylamide.

Guerro et al discloses that crosslinking the polyacrylamide enhances the sizing, strength and printability benefits (col 8, lines 46-49).

The art of Dilts et al, Guerro et al, Pandian et al, Carlson and the instant invention is analogous as pertaining to the sizing of papers using acrylic polymers. It would have been obvious to one of ordinary skill in the art to add the disclosed crosslinking agents to the sizing composition in the process of Dilts et al in view of Guerro et al and Pandian et al and further in view of Carlson to achieve better sizing, strength and printability.

Claim 58 is rejected under 35 U.S.C. 103(a) as unpatentable over Dilts et al or over Guerro et al and Pandian et al in view of Bailey et al (5885340).

Dilts et al, Guerro et al and Pandian et al do not disclose a cationic AKD.

Bailey et al discloses a paper sized with an alkyl ketene dimer wherein the alkyl group has 8-20 carbon atoms (col 3, lines 15-28), a starch adhesive (col 3, lines 35-41) and an acrylic acid (col 4, lines 19-27). Bailey et al teaches that cationic alkyl ketene dimer is a commercially available product, AQUAPEL<sup>®</sup> C519, from Hercules Corporation (col 6, lines 55-57).

The art of Guerro et al, Pandian et al, Dilts et al, Bailey et al and the instant invention is analogous as pertaining to the sizing of papers using AKD. One of ordinary skill in the art would have been aware of available alkyl ketene dimers. Absent evidence of special properties achieved over non-cationic AKD, it would have been obvious at the time of the invention to use a commercially available cationic alkyl ketene dimer in the composition of Dilts et al or over Guerro et al and Pandian et al in view of Bailey et al as well known and functionally equivalent option.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Cordray whose telephone number is 571-272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Application/Control Number:  
10/691,700  
Art Unit: 1791

Page 12

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*DRC*  
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